

PATENT ABSTRACTS OF JAPAN

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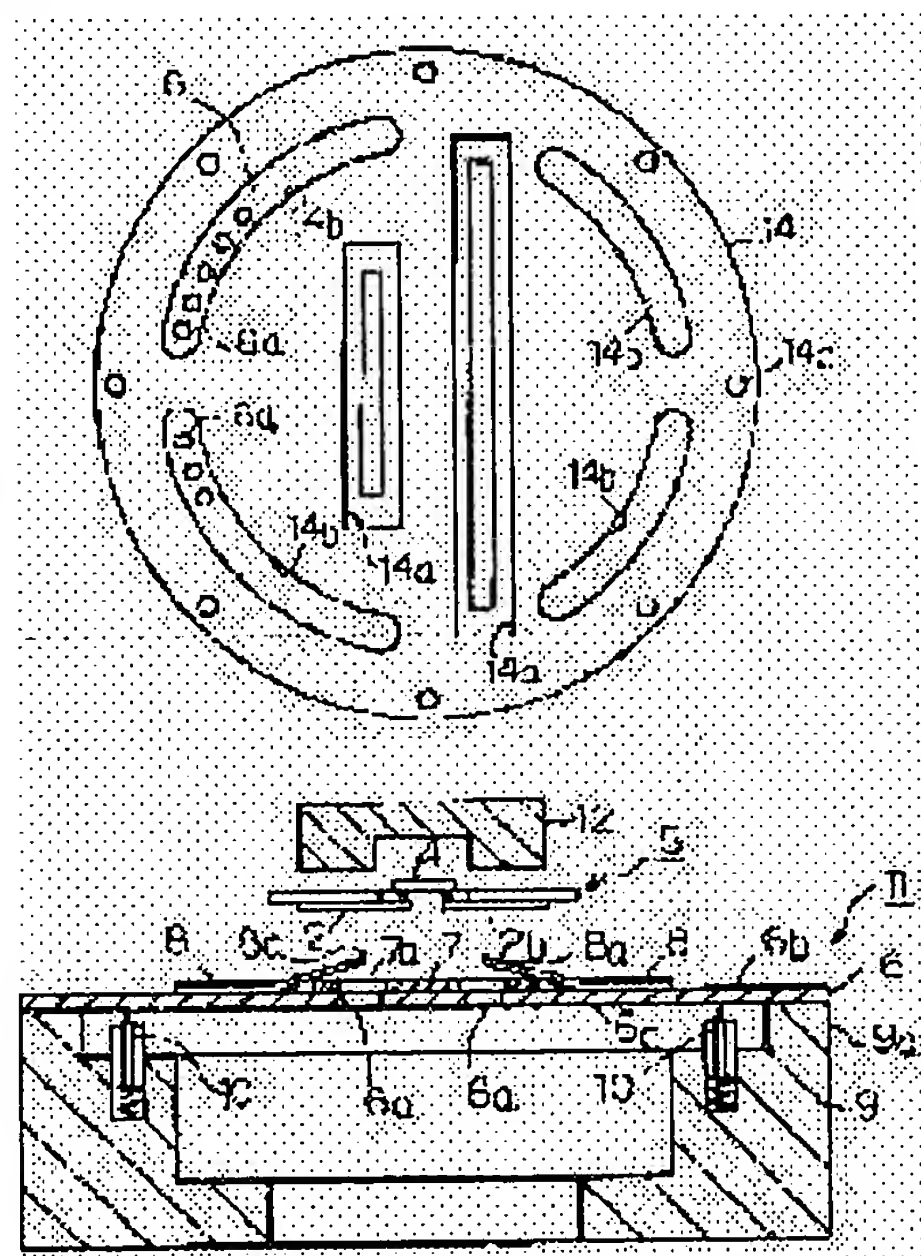
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(54) SEMICONDUCTOR DEVICE INSPECTING HANDLER

(57)Abstract:

PURPOSE: To provide an inspecting handler used for selecting electrical characteristics in the manufacturing process of a TAB type semiconductor device.

CONSTITUTION: Many sets of probe needles 8 are diagonally fixed to a base substrate 6 on one face of the base substrate 6 made of an insulating member so that the idle ends of the probe needles 8 of each set are nearly on a straight line at prescribed intervals, and electrode pads 6d electrically connected to the probe needles 8 are formed on the other face of the base substrate 6. The idle ends of the probe needles 8 are brought into electric and elastic contact with the electrodes of semiconductor devices, and the probe needles 8 are connected to an external measuring device via contact pieces 10 kept in contact with the electrode pads 6d in this semiconductor device inspecting handler. A reinforcing plate 14 nearly equal to the base substrate 6 in diameter and opened with through holes 14b to be inserted with the elastic contact pieces 10 is fixed to the face of the base substrate 6 where the electrode pads 6d are formed.



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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the checking handler used for electrical-characteristics sorting in the manufacture process of a TAB type semiconductor device.

[0002]

[Description of the Prior Art] In a manufacture process, electrical characteristics are measured, it grade-sorts out, the quality judging of the semiconductor device is carried out by the result, and only an excellent article is shipped. The thing of the TAB structure which usually shows the semiconductor device which has hundreds of electrodes here in drawing 4 and drawing 5 is used. In drawing, 1 is a long insulating tape, and it is drilling rectangle-like bore 1b in the longitudinal direction at the predetermined spacing in the middle while it drills the holes 1a and 1a for delivery along with both sides. 2 is the electric conduction pattern which etched and formed the electric conduction foil which carried out the laminating to this insulating tape 1, and contains inner lead 2a which extends in bore 1b, and outer lead 2b by which external connection is made. The TAB tape 3 consists of layered products of this insulating tape 1 and the electric conduction pattern 2. 4 is arranged in bore 1b and shows the semi-conductor pellet in which much electrode 4a was formed on the top face.

[0003] A positioning polymerization is carried out, it connects electrically, and electrode 4a and inner lead 2a of this semi-conductor pellet 4 constitute the semiconductor device middle structure 5 (only henceforth a middle structure). Electric measurement is carried out for every semiconductor device, quality distinction is carried out, moisture-proof processing of the front face of the semi-conductor pellet 4 is carried out by resin covering if needed, and it is mounted [cutting removal of the defective is carried out and / only an excellent article is rolled round by the reel, and this middle structure 5 is pierced by the predetermined configuration from an insulating tape 1, and] in a liquid crystal display etc. An example of the checking handler of this middle structure 5 is explained from drawing 6 and drawing 7. In drawing, 6 is 3.5mm in thickness and the about [diameter 200mm] base substrate which consist of an insulating member, for example, a glass epoxy resin, carries out the parallel array of the rectangle-like bores 6a and 6a, and is drilling them in the center section. 7 is the support plate of the shape of a rectangle made from a ceramic, it drills bore 7a and 7a ** in said bores 6a and 6a and a corresponding part, and adhesion immobilization is carried out on the front face of the pace substrate 6.

[0004] 8 is making the support plate 7 support the pars intermedia which consisted of a member which is the probe needle of the a large number book arranged by one field (top face) 6b of this base substrate 6, is excellent in the abrasion resistance of a tungsten etc. and has elastic force, and were fabricated in the shape of a taper toward the tip, and see each free end 8a superficially, made it arrange on an abbreviation straight line, and pars intermedia was made to incline to the base substrate 6, and inclined. Free end 8a of this probe needle 8 is seen through from bore 6a. The base block which prepared convex wall 9a to which 9 supports the periphery section of the base substrate 6, and 10 are contact which stood erect in the method of the inside of convex wall 9a of a base block 9. It connects with the probe needle 8 electrically through the electric conduction pattern (not shown) which elastic contact was carried out at

other field (inferior surface of tongue) 6c of the base substrate 6, penetrated the base substrate 6, and connected electrically the front rear faces 6b and 6c. Moreover, this contact 10 is connected to the power source and measuring device for external measurement.

[0005] This handler 11 is arranged at the predetermined location lower part of the moving trucking of the middle structure 5 which is guided by the guide device (not shown) and moves, and the middle structure 5 and a handler 11 move up and down relatively, and it carries out contiguity isolation. Moreover, the press block 12 which presses the middle structure 5 in the condition of having made the positioning polymerization of an electrode (electric conduction pattern) and the free end 8a of the probe needle 8 carrying out above the middle structure 5, and sinks the probe needle 8 in predetermined depth is arranged. Actuation of this handler 11 is explained below. First, make a predetermined location stop the semi-conductor pellet 4 of the middle structure 5, and free end 8a of the probe needle 8 of a handler 11 is made to approach the electrode of the middle structure 5. It positions correctly according to the positioning device which observes outer lead 2b and the location of free end 8a with a television camera (not shown), and is not illustrated from bore 6a of the base substrate 6. A handler 11 and the middle structure 5 are made to approach further, and probe needle free end 8a is made to contact outer lead 2b.

[0006] And depress the middle structure 5 with the press block 12 so that about 100 micrometers predetermined depth probe needle free end 8a may sink from this contact side, and the probe needle 8 is made to produce elastic force, contact to outer lead 2b is ensured, and contact resistance is made low as much as possible. Thus, where the electrical installation of an external measuring device and the middle structure 5 is completed, a measuring device is operated, it measures and the quality of the middle structure 5 is distinguished by the result. After measurement is completed, raise the press block 12, the probe needle 8 is made to isolate from the middle structure 5, predetermined pitch migration of the middle structure 5 is carried out, the following semi-conductor pellet is positioned in a predetermined location, and the above-mentioned actuation is repeated. This handler 11 prepares the base substrate 6 which fixed the probe needle 8 corresponding to the electric conduction pattern arrangement structure and the dimension configuration of the middle structure 5, the base substrate 6 corresponding to the middle structure 5 to measure is chosen, and carries out exchange installation at a base block 10, and supports the various middle structures 5.

[0007] As an example, in the case of the semiconductor device for a drive of a liquid crystal display, about 200 electric conduction patterns are formed by 30 thru/or 40, and the output side by the input side, and the outer lead of I/O is isolated 60mm, for example, and is arranged on the parallel straight line from the point of the mounting nature to a liquid crystal display. He is trying for the probe needles 8 and 8 which the probe needle 8 of a numerous output side arranges free end 8a alternately, and it adjoins although the probe needle 8 is also arranged corresponding to this not to short-circuit such a handler for semiconductor devices.

[0008]

[Problem(s) to be Solved by the Invention] By the way, although this handler 11 produced elastic force, raised contact pressure and has lowered contact resistance by making the probe needle 8 push further from a contact side with the middle structure 5 If contact pressure per one of the probe needle 8 is set to several 10 thru/or 100g In the case of said semiconductor device for liquid crystal displays, an input-side probe needle costs 300 thru/or the welding pressure of 1000g, an output side probe needle costs the welding pressure of 2kg thru/or 20kg, respectively, and those force is applied to the probe needle fixed part of the base substrate 6. On the other hand, since many probe needles 8 were divided into two groups and parallel arrangement was mutually carried out, the above-mentioned welding pressure pressed the base substrate 6 to the ununiformity, and they carried out inclination deformation of the center section of the base substrate 6, made contact to the probe needle 8 and the electrode of the middle structure 5 vary, and had the problem that deformation of the base substrate 6 remained, by repetition use.

[0009] Therefore, there are many probe needles 8, and in that by which maldistribution arrangement is moreover carried out on the base substrate 6, as shown in drawing 8, the back up plate 13 as a reinforcement member is fixed to the rear face of the base substrate 6. The stainless steel of high tension with a thickness of about 5mm etc. is used, and this back up plate 13 drills bore 13a in the bore 6a part

of the base substrate 6, and it is being fixed to the center section of the base substrate 5 by the screw stop etc. so that it may not become the failure of contact 10. Although the deformation on the basis of the periphery of base substrate 6 center section could mitigate from about 100 micrometers to 20 thru/or about 30 micrometers and the effectiveness as a reinforcement member has been checked by this Since deformation is large at an output side with many probes, therefore the current which there is a possibility that the contact pressure of the output side probe needle 8 may fall, and contact resistance may also become large, and moreover flows on the probe needle of an output side is large, Since there was a possibility that the voltage drop by contact resistance may affect a measurement result, much more improvement was desired.

[0010] Therefore, the applicant has proposed stopping the back up plate 13 by the external stop member, and controlling deformation, when the probe needle 8 contacts the middle structure 5. (Refer to Japanese Patent Application No. No. 203554 [six to])

Thereby, since the back up plate 13 is stopped by the stop member and maintains an parallel condition, it can prevent the curvature of the base substrate 6. In however, the condition that the probe needle 8 will not be in contact with the middle structure 5 if it is necessary to also extend contact 10 in more middle structures 5 of the number of electrodes corresponding to this and contact 10 is extended It is difficult for the base substrate 6 to be in the condition that the periphery section was pushed up, for the base substrate 6 to incline, if the array of contact 10 is partial, and to maintain the parallel condition of the back up plate 13 and a stop member. When the probe needle 8 attached and detached to the middle structure 5, the base substrate 6 inclined and there was a problem that the condition of contact of the probe needle 8 varied. Moreover, although the number is determined and contact 10 electrically connected with the probe needle 8 is arranged along the periphery of a base block 8 according to the middle structure 5 with most probe needles 8 If the number of probes exceeds 200, contact 10 must be arranged from the periphery of a base block 8 to multiplex toward the method of inside. In a base substrate with few probe needles In spite of having not needed a reinforcement member, there was also a problem of deforming by the thrust received from contact 10.

[0011]

[Means for Solving the Problem] This invention to one field of the base substrate which was proposed for the purpose of solution of the above-mentioned technical problem, and consists of an insulating member While setting predetermined spacing for the probe needle free end of a group and each class, and making many probe needles of an a large number book lot arrange on an abbreviation straight line and carrying out inclination immobilization to a base substrate, the electrode pad electrically connected with each probe needle is formed in other fields of a base substrate. In the semiconductor device checking handler connected to the external measuring device through elastic contact which contacted the free end of each probe needle to the electrode of a semiconductor device electrically and elastically, and made it contact said electrode pad The semiconductor device checking handler characterized by fixing the back up plate which carried out opening of the bore which elastic contact inserts in the electrode pad forming face of the above-mentioned base substrate with the almost same path as a base substrate is offered.

[0012]

[Function] With the above-mentioned technical-problem solution means, since the reinforcement of the whole base substrate can be improved, the curvature of a base substrate can be prevented from both sides of a base substrate to this thrust, and the poor measurement based on dispersion in the contact pressure of a probe needle can be prevented.

[0013]

[Example] The example of this invention is explained from drawing 1 and drawing 2 below. As for a middle structure and 6, in drawing, a base substrate and 7 omit [5] the explanation which a support plate and 8 are probe needles, give the same sign to the same part as drawing 6 by each details, and overlap. Among drawing, it is the back up plate by this invention, and 14 are the almost same path as the base substrate 6, they carry out opening of through tube 14a for observing the electrode location of the free end of the probe needle 8, and the middle structure 5 through the base substrate 6, and the through

tube 14b which elastic contact 10 which contacts electrode pad 6d of the base substrate 6 inserts in, and are being fixed to the electrode pad forming face of the base substrate 6. This back up plate 14 is a stainless steel plate with a thickness of about 3mm, and is drilling several hole 14c for attaching in a periphery at a base substrate.

[0014] Moreover, through tube 14b which contact 10 inserts in is divided into plurality, and is drilled in the periphery of the back up plate 14 in the shape of radii. The base substrate 6 with which this back up plate 14 was fixed is attached in a base block 9, and contact 10 carries out elastic contact at the electrode pad of the base substrate 6, and it connects the probe needle 8 to a measuring device including an external power source. Since, as for the base substrate 6 fixed to the base block 9, the whole surface of a substrate is reinforced by the back up plate 14 even when elastic contact 10 must be extended, since it corresponds to the middle structure 5 with many electrodes, A flat condition can be maintained and bending deformation is prevented by the back up plate 14 which covers the whole surface of the base substrate 6 even if the probe needle 8 starts the base substrate 6 in contact with the middle structure 5 further at the time of measurement as for the excessive force. Thus, since the semiconductor device checking handler by this invention inclines from both sides and can prevent deformation of a base substrate to this force, it can perform certainly electrical installation of the probe needle 8 and the middle structure 5, and can perform exact measurement.

[0015] Moreover, since contact pressure of each probe needle 8 is made to homogeneity, wear of the probe needle 8 does not have a bias, either, can attain reinforcement of the probe needle 8, continues at a long period of time, and can perform exact measurement. Moreover, although it corresponds with the base substrate with a diameter of about 200mm to the about 200 numbers of electrodes, if the number of electrodes exceeds 400, it is necessary to use a diameter 400 thru/or a 500mm base substrate, and this invention can bring about remarkable effectiveness to the base substrate of path size in this way.

Drawing 3 shows the modification of this invention. In drawing, the same sign as drawing 1 shows the same object. Among drawing, although 15 are the back up plate fixed to the rear face of the base substrate 6 and being partially displayed in the example of illustration, much honeycomb-like through tube 15a is formed in the whole surface.

[0016] This through tube 15a is set as the path which at least one elastic contact 10 inserts in, and is set as a path which classifies that light transmission aperture into a large number to bore 6a which looks into free end 8a of the probe needle 8 of the base substrate 6. Since much through tube 15a is formed, even if it is light and the thickness between each through tube 15a is thin by making the configuration of a through tube into the shape of a honeycomb, sufficient reinforcement is obtained, and this back up plate 15 maintains the reinforcement of the base substrate 6, and can carry out [lightweight]-izing of it. In addition, not only the shape of a honeycomb but a triangle, circular, a rhombus, a parallelogram, etc. are sufficient as through tube 15a, for example, without limiting this invention to the above-mentioned example. Moreover, opening which are the through tubes 14a and 15a of the back up plate 14 and 15 can prepare a cylinder part in the periphery at the annular flange or the shaft orientations of the inner direction, and can raise reinforcement.

[0017]

[Effect of the Invention] Since the whole surface of a base substrate was reinforced with the back up plate and the reinforcement was raised, even if the excessive force is applied to the location where both sides of a base substrate inclined as mentioned above according to this invention Deformation of a base substrate can be prevented and dispersion in the height location of a probe needle can be prevented. Since each probe needle is contacted to the electrode of the semiconductor device middle structure which is a device under test by equal contact pressure, things are made and wear of a probe needle can also be equated, it continues at a long period of time, and exact measurement can be performed.

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PRIOR ART

[Description of the Prior Art] In a manufacture process, electrical characteristics are measured, it grade-sorts out, the quality judging of the semiconductor device is carried out by the result, and only an excellent article is shipped. The thing of the TAB structure which usually shows the semiconductor device which has hundreds of electrodes here in drawing 4 and drawing 5 is used. In drawing, 1 is a long insulating tape, and it is drilling rectangle-like bore 1b in the longitudinal direction at the predetermined spacing in the middle while it drills the holes 1a and 1a for delivery along with both sides. 2 is the electric conduction pattern which etched and formed the electric conduction foil which carried out the laminating to this insulating tape 1, and contains inner lead 2a which extends in bore 1b, and outer lead 2b by which external connection is made. The TAB tape 3 consists of layered products of this insulating tape 1 and the electric conduction pattern 2. 4 is arranged in bore 1b and shows the semi-conductor pellet in which much electrode 4a was formed on the top face.

[0003] A positioning polymerization is carried out, it connects electrically, and electrode 4a and inner lead 2a of this semi-conductor pellet 4 constitute the semiconductor device middle structure 5 (only henceforth a middle structure). Electric measurement is carried out for every semiconductor device, quality distinction is carried out, moisture-proof processing of the front face of the semi-conductor pellet 4 is carried out by resin covering if needed, and it is mounted [cutting removal of the defective is carried out and / only an excellent article is rolled round by the reel, and this middle structure 5 is pierced by the predetermined configuration from an insulating tape 1, and] in a liquid crystal display etc. An example of the checking handler of this middle structure 5 is explained from drawing 6 and drawing 7. In drawing, 6 is 3.5mm in thickness and the about [diameter 200mm] base substrate which consist of an insulating member, for example, a glass epoxy resin, carries out the parallel array of the rectangle-like bores 6a and 6a, and is drilling them in the center section. 7 is the support plate of the shape of a rectangle made from a ceramic, it drills bore 7a and 7a ** in said bores 6a and 6a and a corresponding part, and adhesion immobilization is carried out on the front face of the pace substrate 6. [0004] 8 is making the support plate 7 support the pars intermedia which consisted of a member which is the probe needle of the a large number book arranged by one field (top face) 6b of this base substrate 6, is excellent in the abrasion resistance of a tungsten etc. and has elastic force, and were fabricated in the shape of a taper toward the tip, and see each free end 8a superficially, made it arrange on an abbreviation straight line, and pars intermedia was made to incline to the base substrate 6, and inclined. Free end 8a of this probe needle 8 is seen through from bore 6a. The base block which prepared convex wall 9a to which 9 supports the periphery section of the base substrate 6, and 10 are contact which stood erect in the method of the inside of convex wall 9a of a base block 9. It connects with the probe needle 8 electrically through the electric conduction pattern (not shown) which elastic contact was carried out at other field (inferior surface of tongue) 6c of the base substrate 6, penetrated the base substrate 6, and connected electrically the front rear faces 6b and 6c. Moreover, this contact 10 is connected to the power source and measuring device for external measurement.

[0005] This handler 11 is arranged at the predetermined location lower part of the moving trucking of the middle structure 5 which is guided by the guide device (not shown) and moves, and the middle

structure 5 and a handler 11 move up and down relatively, and it carries out contiguity isolation. Moreover, the press block 12 which presses the middle structure 5 in the condition of having made the positioning polymerization of an electrode (electric conduction pattern) and the free end 8a of the probe needle 8 carrying out above the middle structure 5, and sinks the probe needle 8 in predetermined depth is arranged. Actuation of this handler 11 is explained below. First, make a predetermined location stop the semi-conductor pellet 4 of the middle structure 5, and free end 8a of the probe needle 8 of a handler 11 is made to approach the electrode of the middle structure 5. It positions correctly according to the positioning device which observes outer lead 2b and the location of free end 8a with a television camera (not shown), and is not illustrated from bore 6a of the base substrate 6. A handler 11 and the middle structure 5 are made to approach further, and probe needle free end 8a is made to contact outer lead 2b. [0006] And depress the middle structure 5 with the press block 12 so that about 100 micrometers predetermined depth probe needle free end 8a may sink from this contact side, and the probe needle 8 is made to produce elastic force, contact to outer lead 2b is ensured, and contact resistance is made low as much as possible. Thus, where the electrical installation of an external measuring device and the middle structure 5 is completed, a measuring device is operated, it measures and the quality of the middle structure 5 is distinguished by the result. After measurement is completed, raise the press block 12, the probe needle 8 is made to isolate from the middle structure 5, predetermined pitch migration of the middle structure 5 is carried out, the following semi-conductor pellet is positioned in a predetermined location, and the above-mentioned actuation is repeated. This handler 11 prepares the base substrate 6 which fixed the probe needle 8 corresponding to the electric conduction pattern arrangement structure and the dimension configuration of the middle structure 5, the base substrate 6 corresponding to the middle structure 5 to measure is chosen, and carries out exchange installation at a base block 10, and supports the various middle structures 5.

[0007] As an example, in the case of the semiconductor device for a drive of a liquid crystal display, about 200 electric conduction patterns are formed by 30 thru/or 40, and the output side by the input side, and the outer lead of I/O is isolated 60mm, for example, and is arranged on the parallel straight line from the point of the mounting nature to a liquid crystal display. He is trying for the probe needles 8 and 8 which the probe needle 8 of a numerous output side arranges free end 8a alternately, and it adjoins although the probe needle 8 is also arranged corresponding to this not to short-circuit such a handler for semiconductor devices.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, although this handler 11 produced elastic force, raised contact pressure and has lowered contact resistance by making the probe needle 8 push further from a contact side with the middle structure 5. If contact pressure per one of the probe needle 8 is set to several 10 thru/or 100g. In the case of said semiconductor device for liquid crystal displays, an input-side probe needle costs 300 thru/or the welding pressure of 1000g, an output side probe needle costs the welding pressure of 2kg thru/or 20kg, respectively, and those force is applied to the probe needle fixed part of the base substrate 6. On the other hand, since many probe needles 8 were divided into two groups and parallel arrangement was mutually carried out, the above-mentioned welding pressure pressed the base substrate 6 to the ununiformity, and they carried out inclination deformation of the center section of the base substrate 6, made contact to the probe needle 8 and the electrode of the middle structure 5 vary, and had the problem that deformation of the base substrate 6 remained, by repetition use.

[0009] Therefore, there are many probe needles 8, and in that by which maldistribution arrangement is moreover carried out on the base substrate 6, as shown in drawing 8, the back up plate 13 as a reinforcement member is fixed to the rear face of the base substrate 6. The stainless steel of high tension with a thickness of about 5mm etc. is used, and this back up plate 13 drills bore 13a in the bore 6a part of the base substrate 6, and it is being fixed to the center section of the base substrate 5 by the screw stop etc. so that it may not become the failure of contact 10. Although the deformation on the basis of the periphery of base substrate 6 center section could mitigate from about 100 micrometers to 20 thru/or about 30 micrometers and the effectiveness as a reinforcement member has been checked by this. Since deformation is large at an output side with many probes, therefore the current which there is a possibility that the contact pressure of the output side probe needle 8 may fall, and contact resistance may also become large, and moreover flows on the probe needle of an output side is large, Since there was a possibility that the voltage drop by contact resistance may affect a measurement result, much more improvement was desired.

[0010] Therefore, the applicant has proposed stopping the back up plate 13 by the external stop member, and controlling deformation, when the probe needle 8 contacts the middle structure 5. (Refer to Japanese Patent Application No. No. 203554 [six to])

Thereby, since the back up plate 13 is stopped by the stop member and maintains an parallel condition, it can prevent the curvature of the base substrate 6. In however, the condition that the probe needle 8 will not be in contact with the middle structure 5 if it is necessary to also extend contact 10 in more middle structures 5 of the number of electrodes corresponding to this and contact 10 is extended. It is difficult for the base substrate 6 to be in the condition that the periphery section was pushed up, for the base substrate 6 to incline, if the array of contact 10 is partial, and to maintain the parallel condition of the back up plate 13 and a stop member. When the probe needle 8 attached and detached to the middle structure 5, the base substrate 6 inclined and there was a problem that the condition of contact of the probe needle 8 varied. Moreover, although the number is determined and contact 10 electrically connected with the probe needle 8 is arranged along the periphery of a base block 8 according to the middle structure 5 with most probe needles 8. If the number of probes exceeds 200, contact 10 must be

arranged from the periphery of a base block 8 to multiplex toward the method of inside. In a base substrate with few probe needles In spite of having not needed a reinforcement member, there was also a problem of deforming by the thrust received from contact 10.

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MEANS

[Means for Solving the Problem] This invention to one field of the base substrate which was proposed for the purpose of solution of the above-mentioned technical problem, and consists of an insulating member While setting predetermined spacing for the probe needle free end of a group and each class, and making many probe needles of an a large number book lot arrange on an abbreviation straight line and carrying out inclination immobilization to a base substrate, the electrode pad electrically connected with each probe needle is formed in other fields of a base substrate. In the semiconductor device checking handler connected to the external measuring device through elastic contact which contacted the free end of each probe needle to the electrode of a semiconductor device electrically and elastically, and made it contact said electrode pad The semiconductor device checking handler characterized by fixing the back up plate which carried out opening of the bore which elastic contact inserts in the electrode pad forming face of the above-mentioned base substrate with the almost same path as a base substrate is offered.

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EXAMPLE

[Example] The example of this invention is explained from drawing 1 and drawing 2 below. As for a middle structure and 6, in drawing, a base substrate and 7 omit [5] the explanation which a support plate and 8 are probe needles, give the same sign to the same part as drawing 6 by each details, and overlap. Among drawing, it is the back up plate by this invention, and 14 are the almost same path as the base substrate 6, they carry out opening of through tube 14a for observing the electrode location of the free end of the probe needle 8, and the middle structure 5 through the base substrate 6, and the through tube 14b which elastic contact 10 which contacts electrode pad 6d of the base substrate 6 inserts in, and are being fixed to the electrode pad forming face of the base substrate 6. This back up plate 14 is a stainless steel plate with a thickness of about 3mm, and is drilling several hole 14c for attaching in a periphery at a base substrate.

[0014] Moreover, through tube 14b which contact 10 inserts in is divided into plurality, and is drilled in the periphery of the back up plate 14 in the shape of radii. The base substrate 6 with which this back up plate 14 was fixed is attached in a base block 9, and contact 10 carries out elastic contact at the electrode pad of the base substrate 6, and it connects the probe needle 8 to a measuring device including an external power source. Since, as for the base substrate 6 fixed to the base block 9, the whole surface of a substrate is reinforced by the back up plate 14 even when elastic contact 10 must be extended, since it corresponds to the middle structure 5 with many electrodes, A flat condition can be maintained and bending deformation is prevented by the back up plate 14 which covers the whole surface of the base substrate 6 even if the probe needle 8 starts the base substrate 6 in contact with the middle structure 5 further at the time of measurement as for the excessive force. Thus, since the semiconductor device checking handler by this invention inclines from both sides and can prevent deformation of a base substrate to this force, it can perform certainly electrical installation of the probe needle 8 and the middle structure 5, and can perform exact measurement.

[0015] Moreover, since contact pressure of each probe needle 8 is made to homogeneity, wear of the probe needle 8 does not have a bias, either, can attain reinforcement of the probe needle 8, continues at a long period of time, and can perform exact measurement. Moreover, although it corresponds with the base substrate with a diameter of about 200mm to the about 200 numbers of electrodes, if the number of electrodes exceeds 400, it is necessary to use a diameter 400 thru/or a 500mm base substrate, and this invention can bring about remarkable effectiveness to the base substrate of path size in this way.

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[0016] This through tube 15a is set as the path which at least one elastic contact 10 inserts in, and is set as a path which classifies that light transmission aperture into a large number to bore 6a which looks into free end 8a of the probe needle 8 of the base substrate 6. Since much through tube 15a is formed, even if it is light and the thickness between each through tube 15a is thin by making the configuration of a through tube into the shape of a honeycomb, sufficient reinforcement is obtained, and this back up

plate 15 maintains the reinforcement of the base substrate 6, and can carry out [lightweight]-izing of it. In addition, not only the shape of a honeycomb but a triangle, circular, a rhombus, a parallelogram, etc. are sufficient as through tube 15a, for example, without limiting this invention to the above-mentioned example. Moreover, opening which are the through tubes 14a and 15a of the back up plate 14 and 15 can prepare a cylinder part in the periphery at the annular flange or the shaft orientations of the inner direction, and can raise reinforcement.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The sectional side elevation of the semiconductor device checking handler in which the example of this invention is shown

[Drawing 2] The top view showing the using-for drawing 1 handler back up plate

[Drawing 3] The top view of the back up plate showing the modification of this invention

[Drawing 4] The perspective view showing a TAB type semiconductor device middle structure

[Drawing 5] The sectional side elevation of the middle structure shown in drawing 4

[Drawing 6] The sectional side elevation of the handler used for electrical-characteristics inspection of the drawing 4 middle structure

[Drawing 7] The plan of the drawing 6 handler

[Drawing 8] The important section sectional side elevation of the handler using the base substrate reinforced with the back up plate

[Description of Notations]

6 Base Substrate

8 Probe Needle

10 Elastic Contact

11 Handler

14 Back Up Plate

14b Through tube

15 Back Up Plate

15a Through tube

[Translation done.]

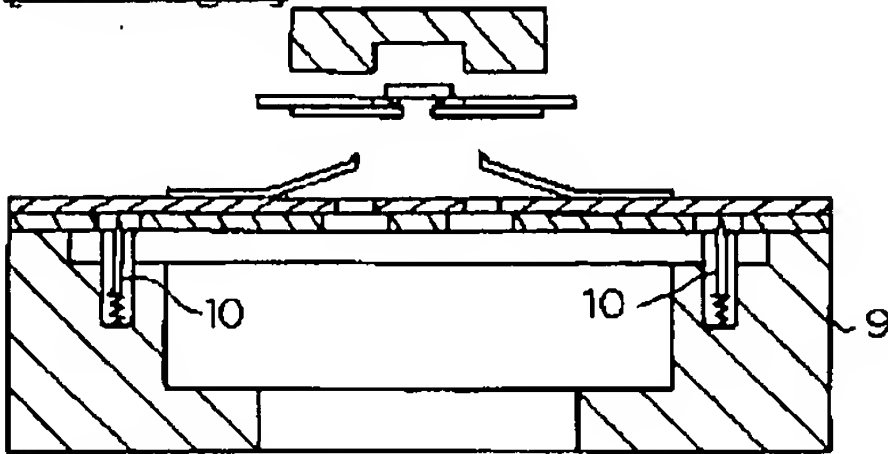
* NOTICES *

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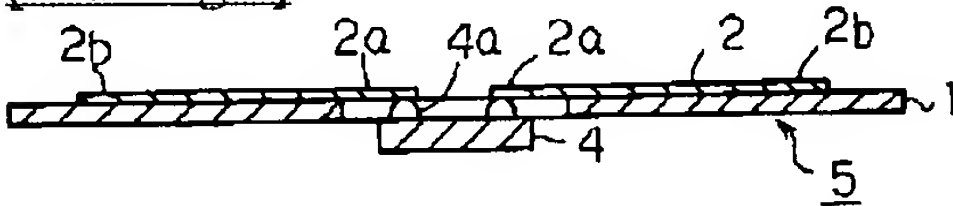
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

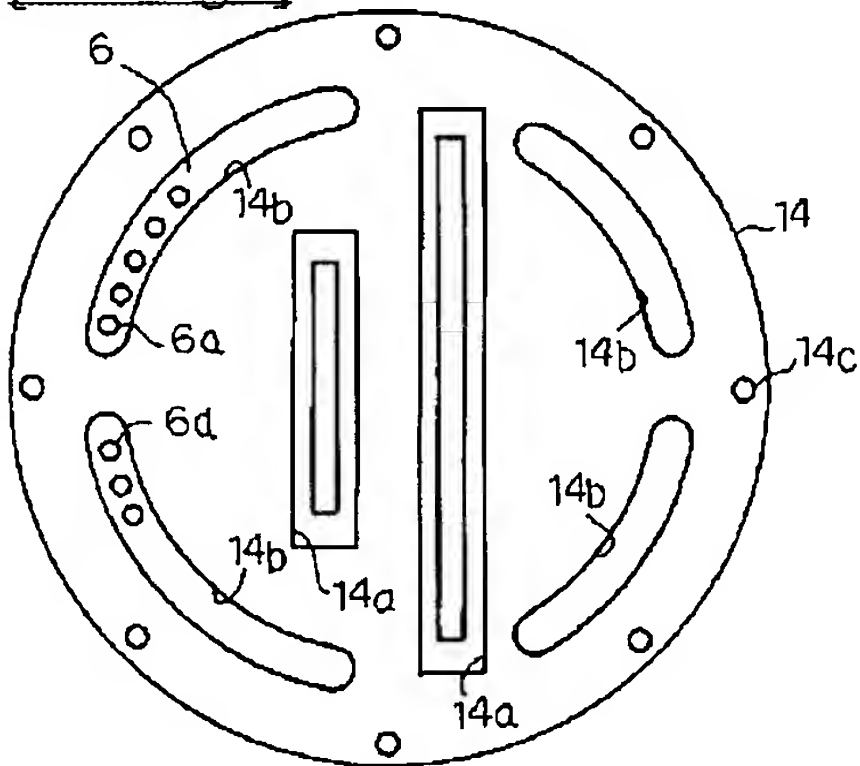
[Drawing 1]



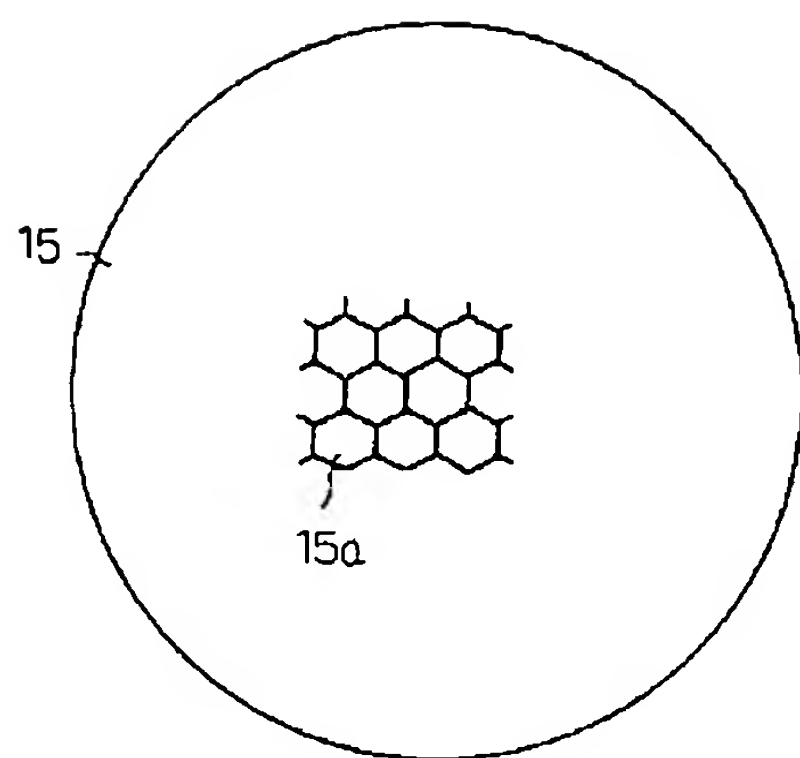
[Drawing 5]



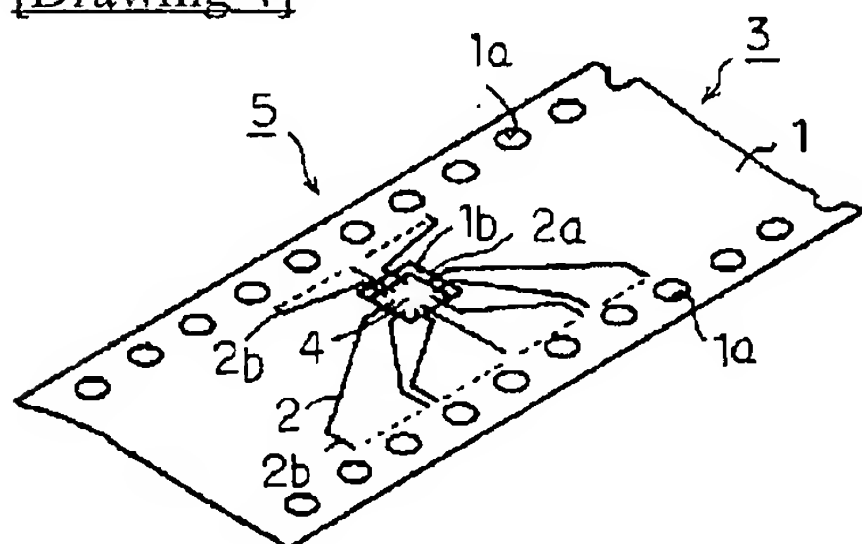
[Drawing 2]



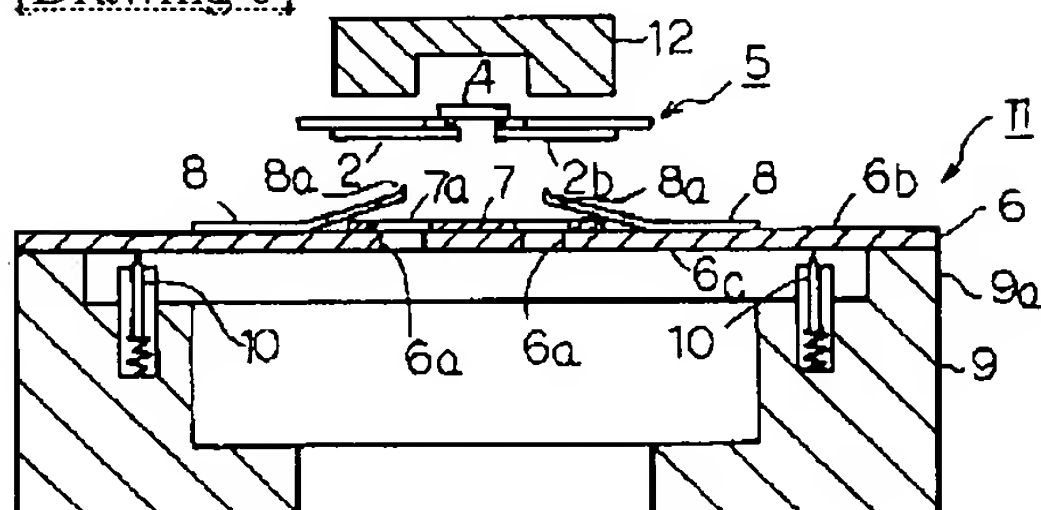
[Drawing 3]



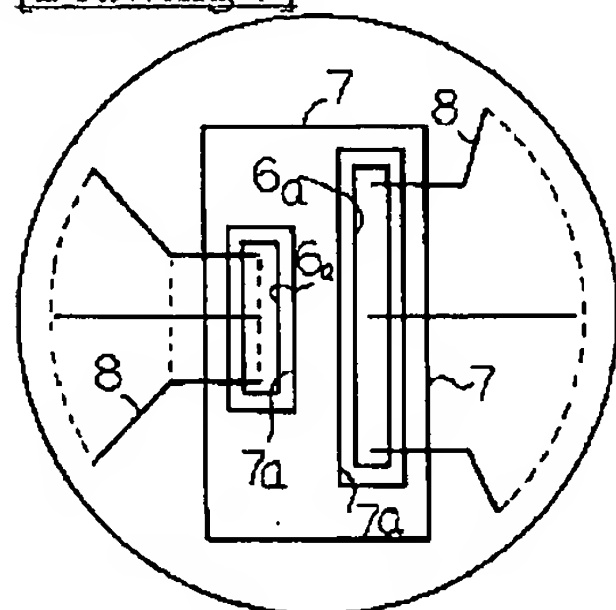
[Drawing 4]



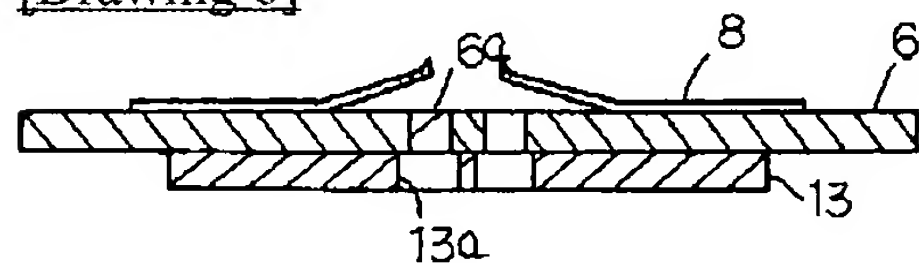
[Drawing 6]



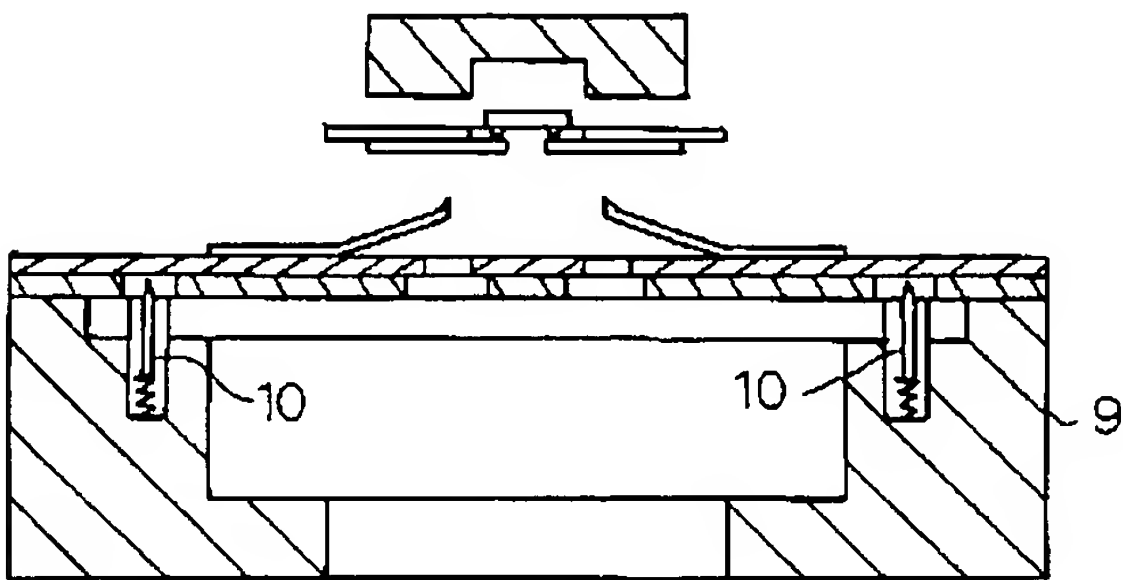
[Drawing 7]



[Drawing 8]



Drawing selection **Representative drawing** ▼



[Translation done.]